

Remarks

Examiner in his office action dated Dec. 19, 2005 rejected claims 1-4 and 7-32.
Applicant responds to the rejection as follows:

112 Rejections

Examiner pointed out the limitation "the natural environment" in claim one as lacking antecedent basis. Please note that element one of claim 1 which comprises "a mobile vehicle operable in a **natural environment** having. . . (emphasis added)" provides the antecedent basis for later uses of the term "the natural environment."

Examiner also states that "[a]pplicant fails to point out how the generated object is in alignment with the natural environment." Please note that there is ample support for the mechanism to provide such an alignment, for example on paragraphs in 0028 and 0045 of the application. In these paragraphs at least, details were provided on how various measurements (acceleration, operator steering, etc.) are fed to a mathematical model of the vehicle which in turn alters the environment view to compensate for the position and orientation of the vehicle. For instance, as the vehicle turns to the left the viewed environment moves to the right, and so too must any computer-generated object which is meant to be aligned with the road. Paragraphs 0040, 0041 and 0049 further elaborate these points, including movement of both operator's head and vehicle relative to the natural environment.

Therefore, Examiner's 112 rejections are respectfully traversed.

102 Rejections

Examiner rejected claims 1-4 and 7-31 as being unpatentable over USPN 6,188,414 by Gregory Kintz ("Kintz").

Kintz claims a novel means to display a virtual image through a surface containing a multiplicity of light surface emitters, the surface surrounding the observer to some extent (Col. 3, lines 27-34). The invention solves certain light scattering problems. The light emitters can be activated by rotating "light arcs" corresponding to the raster scan in a conventional video. The image surface can be part reflective and part transparent, and applicability of this mechanism to simulation of driving is claimed. More specifically, Kintz makes claims for a novel means to perform optical projections that surround the human viewer. The invention in the current application is not related to such a method or system, but rather depends on conventional optical display means, of which several are mentioned: video monitor, projector and head-mounted display, both see-thru and conventional (Paragraph 0011)

While Kintz uses some of the same key words as Applicant uses in the current invention, the similarities stop there at the vocabulary level. For example, Kintz claims to put the entire spherical (conical or etc.) projection system, necessarily too large to put into a normal highway vehicle, mounted on a moving support structure with a gangway to enter the sphere and riding on something resembling railroad tracks (Fig. 1). This is hardly the same "mobility" as what is described in this invention, which comprises a system operating within an actual highway or other vehicle capable of being controlled by the driver on a road or track in the normal way (Abstract and paragraphs 0008-0010). Further, as stated in 0010 and claim 1, and in contrast to Kintz, the invention is "based on resulting operator actuation of vehicle control or vehicle movement, regenerating the [seen] environment"

More specifically, independent claims 1 and 23 call for a scene display by including artificially generated object not currently present in the natural environment but aligned with the natural environment. Nowhere does Kintz mention any means to align any image generated by the image generator with any current feature of the natural environment. Such alignment must necessarily involve measurement of the vehicle relative to the natural environment, which, while discussed extensively in the present application, is not discussed at all in Kintz. Kintz may refer to measurement of the position of the light arc (Col. 12, lines 10-60), but that hardly constitutes a hazard object in a "natural environment." Kintz also makes references to "real" and "virtual"

images (Col. 14, lines 35 on), but in Kintz these are BOTH computer generated images, one by the rotating array and one not, perhaps one by an out-the-window simulation and one of the control panel simulation (e.g., in an airplane). There is no display of real-time images of the REAL natural environment, and certainly no real-time measure of any feature of it for purposes of aligning virtual and natural objects.

In contrast, paragraph 0012 of the present application stated that "The scene generator may alter artificial images within the environment view in response to vehicle movement, operator actuation of vehicle controls, and predetermined artificial image movement." This is done through a computer model, various inputs to which may be used to alter this image (paragraphs 0014 and 0027). These paragraphs provide several means to alter the computer-generated scene through the computer, including accelerometer, gyroscope (both part of an inertial measurement unit or IMU), direct positional measurement (an obvious example of which is video camera cited in claim 11 and elsewhere that picks up any specified light source at different pixel positions in correspondence to the source's position relative to the camera lens), laser triangulation, and steering wheel rotation coupled to computer model of vehicle dynamics (as is common to any computer game simulation of vehicle driving to determine what the simulated vehicle does in response to wheel actuation).

Applicant respectfully submits that the rejections and objections in the Office Action dated Dec. 19, 2005 have been overcome and the application is now in condition for allowance. The Examiner is invited to call the undersigned at 408-776-8719 if there remains any issue with allowance of this case.

Dated: 2006

Respectfully submitted,

By: _____

Elizabeth Chien-Hale
Registration No. 44,077

Address: 40087 Mission Blvd. #367
Fremont, CA 94539
Telephone: (408)776-8719
Facsimile: (408)776-8718